Chlortetracycline and Oxytetracycline In Feeds: Qualitative Tests

Scope

This method provides a qualitative test for the presence of chlortetracycline and oxytetracycline in animal feeds.

Summary

A ground feed sample is exposed to modified Sakaguchi reagent and a color change is observed if chlortetracycline or oxytetracycline is present.

Comments

A. No information regarding the quantity of chlortetracycline or oxytetracycline present in the sample can be obtained with this method. Do not attempt to draw conclusions on concentration based on the amount of color change.

B. Several feed ingredients such as milo hulls and the bran from corn will turn red as carmelization takes place. However, by observing through the microscope it will be noted that these particles are sharp edged, contrasted to the fuzzy appearance of the actual antibiotics. Also to be noted is the red "smokelike" color running off from the particles of the oxytetracycline.

Apparatus and Materials

A. Petri dish, 9 cm.

B. No. 60 sieve.

C. Microscope, stereoscopic: 15 x magnification.

D. Light Source, blue.

Reagents

A. Modified Sakaguchi Reagent: Dissolve 5 g of boric acid (H_3BO_3) in 150 ml of deionized water. Add 350 ml of concentrated sulfuric acid. (Caution: addition of concentrated sulfuric acid to water produces considerable heat. Provide a means to cool the container and follow all safety precautions for handling concentrated sulfuric acid.). Store in a glass stoppered bottle in a refrigerator. Use the reagent cold.

Procedure

A. Pipet approximately 10 ml of the modified Sakaguchi reagent into the petri dish.

B. Place a No. 60 sieve over the top of the dish.

C. Place about 0.5 g of sample on the sieve and gently tap it to obtain a good distribution of particles over the surface of the reagent.

D. Place the petri dish on a white background under a stereoscopic microscope and examine it with blue light at 15 x.

E. Note any color changes. As the particles of the antibiotic chlortetracycline slowly dissolve into the reagent the diffusing antibiotic turns an intense purple. These purple spots are a positive test for chlortetracycline. As the particles of the antibiotic oxytetracycline slowly dissolve into the reagent the diffusing antibiotic turns an intense red. These diffuse red spots are a positive test for oxytetracycline. The color will fade in 5-10 minutes.

Bibliography

Official Methods of Analysis (1975), AOAC, Washington, D.C., secs. 42.188-42.190